From extractive to transformative industries

Bastida, Ana Elizabeth

Published in:
Mineral Economics

DOI:
10.1007/s13563-014-0062-8

Publication date:
2014

Document Version
Peer reviewed version

Miner Econ
DOI 10.1007/s13563-014-0062-8

EDITORIAL PAPER

From *extractive* to *transformative* industries: paths for linkages and diversification for resource-driven development

Ana Elizabeth Bastida

Abstract While conventional wisdom has placed the focus of the mining and oil and gas sectors on the fact of extraction, a prolific line of the debate on these industries is shifting towards the extent to which resources, as initial assets, can be transformed into broader-based development by promoting cross-sectoral linkages and diversification. This paper provides an overview of the *Special Issue of Mineral Economics, Can Mining be a Catalyst for Diversifying Economies?*, exploring trends and suggesting challenges for concepts and practice in these industries. It points to the Post-2015 Development Agenda as an opportunity of a transformational role for the mining industry.

Keywords Africa Mining Vision · Mining · Linkages · Diversification · Mining codes · Resource-based development · Resource-driven development · Sustainable Development Goals · Post-2015 Development Agenda

Introduction

Can mining be a catalyst for diversifying economies? Emerging experiences and lessons. This was the working question guiding the debate at the seminar that brought the authors of the papers and commentaries of this Special Issue and other colleagues together. The starting point of the seminar was the emerging debates and policy instruments pointing at a role for mining as a catalyst for potential economic diversification. The objective was to gain knowledge and a perspective on the fragmented understanding both in terms of conceptualisation and of experiences in the sector on the question of how cross-sector linkages supporting economic diversification have been and could be built.

The question has gained momentum in the light of the increasing number of countries in which the resources sector represents a major share of their economies, driven by the high prices of the last decade and the expansion of production into new geographies. In spite of the recent slowdown of prices and demand, it is estimated that over the long term, the prospects of demand driven by new industrialising countries with growing consuming societies is unprecedented (McKinsey 2013; see though current challenges to iron ore prices in Financial Times 2014). The major challenge for resource-driven economies looking at options for diversification is not the *rate* of growth, but the *quality* of growth, and the urgent need to promote *inclusive* growth, particularly for young people, in ways that integrate environmental concerns (Kaplinsky 2013). Resources are initial non-renewable natural assets that can be *transformed* into other forms of sustainable capital and can play a vital role in catalysing development.

Inclusive growth that places priority in eradicating poverty, fully mainstreaming all the dimensions of sustainable development and changing patterns of production and consumption is at the heart of the Rio +20 Outcome Document, *The Future We Want*, and guides the process for the formulation of Sustainable Development Goals (which merge the Millennium Development Goals due to expire in 2015) that inform the next Post-2015 Development Agenda. Mining is set to have a crucial role in mobilising resources for such agenda at country levels (UNCTAD 2014; UNDP 2012).

A special acknowledgment to Dr. Anida Yupari Aguado for the invaluable discussions on various strands of debate related to the theme of this Special Issue (that assisted in identifying the title of this paper), particularly on developments related to the Post-2015 Sustainable Development Agenda, and to Magnus Ericsson for very substantial comments, materials and input

Editorial Paper of the *Special Issue of Mineral Economics*, *Can Mining be a Catalyst for Diversifying Economies?* co-edited with Magnus Ericsson, October 2014.

A. E. Bastida (✉)
The Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP), University of Dundee, Dundee, UK
e-mail: e.a.bastida@dundee.ac.uk

This *Special Issue of Mineral Economics* brings together some of the materials and discussions of the referred seminar. It includes different types of contributions: review papers, research papers and comments. While the first ones have gone through the peer-review process typical of academic conventions, the commentaries provide views from practice. This Editorial Paper provides a review of the findings of the papers and commentaries of this Issue as well as of presentations at the seminar, explores a few emerging trends and reflects on some of the implications and challenges in unleashing a transformational role for the resource sector.

The seminar was organised jointly by the Centre for Energy, Petroleum and Mineral Law & Policy, University of Dundee (CEPMLP) and the Raw Materials Group and took place at the Natural History Museum in London on 24 and 25 June 2013.[1]

Conceptualising the debate on building linkages and promoting diversification

In her chapter "Diversifying mineral economies: conceptualising the debate on building linkages", Evelyn Dietsche places the debate on the relationship between mining and development into perspective by distinguishing between three stages over the last three decades. Over the 1980s–1990s, the focus in policy circles was about establishing enabling environments for investment to generate tax revenue and foreign currency. This applied particularly to low- and middle-income economies that emerged largely indebted following the economic crises of the time. In the 2000s, the emphasis was placed particularly on avoiding the "resource curse". The "resource curse" theory was propounded by studies that saw a negative correlation between resources and development. Explanations put forward range from macro-economic to political—and within these between those that focus on *rent-seeking* on mineral rents by those in power, and those that examine into the causes of *rentier states*. To calibrate mining in terms of development, those who support rent-seeking explanations have argued for the need to introduce policy interventions—often externally—to improve the quality of institutions in resource-producing countries. More recently, greater emphasis is placed on building linkages between the resources sector and other economic sectors to promote economic diversification and industrialisation. In reviewing the literature in this area, the author stresses the question is not new. In the 1950s, structural economists had advocated for diversification based on the observation that primary products are exposed to declining terms of trade. A main tenet of economic policies of the 1960s and 1970s was to take control of economic and social development by public investment in "strategic" sectors like mining, which was considered a springboard to development.

Basically, large extractive projects can operate as "enclaves", without forging linkages with local communities and local economies (Auty 2006; see characteristics of mining enclaves in Arias et al. 2013). As mining can inject large amounts of capital in regions with scarce pre-existing economic strengths, this can *potentially* establish the grounds for more diversified economies provided proper management actions are taken. Local and regional economic development does not occur automatically, but assertive policy directions are needed. In their absence, the opportunity for mining regions to maximise the relatively strong monetary contributions from mining to build the basis for a diversified and sustainable economic structure might be missed (Di Boscio and Humphreys 2005).

Drawing on research conducted under the *Making the Most of Commodities Program,* run jointly by the Open University (UK) and the University of Cape Town (South Africa) in 2009–2011, the chapter by Masuma Farooki and Raphael Kaplinsky "Promoting diversification in resource rich economies" develops a framework for the use of resource rents to promote industrial diversification. This builds on the work of Albert Hirschman (1981). They note that Hirschman distinguishes between three types of linkages from the commodities sector to the industrial sector: *fiscal* linkages, consisting of taxes and royalties, which could be used to promote industrial development in other sectors; *consumption* linkages, referring to the demand for the output of other sectors raised by incomes in the commodities sector and *production* linkages, which include *forward* (adding value by processing and refining, and even using minerals as inputs for local industries) and *backward* (supplying goods and services for the commodities sector). The authors also include *horizontal* linkages, which refer to capabilities developed in the resources sector that can help build other industrial sector or services. Out of the categories outlined by Hirschman, they observe that the extent of production linkages (which Hirschman saw as having the most potential for linkage development) depends of the magnitude and technological intensity of production and the scale of "technological strangeness" between the resource sector and sectors linking up. The conclusion is that the development of production linkages potentially, but not necessarily, offers a path towards industrial diversification. The authors explore policy options at *macro*-, *meso*- and *micro*-levels to build each type of linkages in low- and middle-income resource economies.

The report of the *International Study Group for the Review of African Mining Regimes* (ISG) (UNECA 2011) has elaborated conceptually on linkages (to contextualise options in Africa). The report terms *backward* linkages as *upstream*;

[1] Raw Materials Group of Stockholm is since the beginning of 2014 part of SNL Metals & Mining. The seminar was funded by Rio Tinto plc through the Partnering Agreement it has with CEPMLP.

forward linkages as *downstream*, and horizontal linkages as *side-stream* (the latter defined as support industries and structures instrumental for the operation and competitiveness of the mining industry, including infrastructure, energy, logistics, financial services, technological development and research)[2] and also includes *lateral* linkages (which emerge in more advanced phases of industrial development as the skills and capacities gained in mining are applied to other productive sectors—as knowledge and skills on construction equipment, processes control, chemicals management). Drawing from research and comparative experience, the report of the ISG aims at providing guidance for the implementation of the *Africa Mining Vision* (AMV), adopted by Heads of States of the African Union in February 2009. The AMV is Africa's own-crafted response to deal with the bleak divergence between enormous mineral wealth and stark poverty that profoundly affect the continent (UNECA 2011, p. 9). It comes a long way from the approach of the World Bank's 1992 *Strategy for African Mining* that placed the focus on the role of mining in generating tax and foreign currency, and that inspired a generation of mining codes across the continent. Building economic and social linkages for promoting industrialisation and diversifying economies to catalyse structural economic transformations are at the core of the AMV (see further Pedro 2013a, b, 2014). The role of minerals in industrialisation and structural transformation is furthered in a series of regional studies (UNECA 2013, 2014; African Development Bank, Organisation for Economic Cooperation and Development Development Centre, United Nations Development Programme 2013, 2014; see Jourdan 2008) and also broader studies (UNIDO 2012; see reflections on implications for donor agencies in Buur et al. 2013).

In bridging the *conceptual gap* on the understanding of building linkages and promoting diversification and industrialisation out of the resources sector, the contribution of the literature on industrial development has been instrumental. It draws the attention on the need of transcending narrow sectoral and "silo" approaches and expanding multidisciplinary and cross-sectoral understanding to capture the sheer complexity of responses required for a transformational role for extractive industries to unfold. This takes us to another essential point outlined by the superb analysis and the literature review conducted by Dietsche, drawing on conclusions of the groundbreaking study by Morris et al. (2012; see a review in Pedro 2014): that "building linkages requires coordination and positive collaborative action across all three levels of industrial policy", and that context matters and is a crucial determinant of the extent and level of coordination and collaboration between the public and the private sectors. Coordination and collaboration between the public and the private sectors take place in forums for information sharing and for developing a common vision and "joined-up strategies".

Dietsche observes that industrial policies should be purposefully designed to support joint learning and collaboration between the public and private sectors, and to provide incentives for the private sector to share the information required to understand hurdles to entrepreneurship and business. Based on the findings derived from the literature, she suggests a criteria for the use of industrial policy to achieve certain outcomes (sound macro-economic policies at the macro-level, inter-firm learning at the meso-level, measures to address challenges to firms at the micro-level and forums for supporting coordination and collaboration across all levels) and puts a very substantial question forward: Whether the debate around building linkages has been framed taking into consideration the important findings from this literature, in order to achieve development outcomes.

The emphasis on coordination, cooperation and collaboration as conducive of an enabling environment for industrial linkages fits nicely with the direction of theoretical "realignment" in the field of law and development—"a field that exists at the intersection of law, economics and the practices of states and development agencies" (Trubek et al. 2011 and Trubek 2013).[3] "New developmental" states (as Brazil) are experimenting with an array of policies that transcend and mix elements of the usual categories of state-led and market-led economies, and in which the government supports open economy industrial policy and plays a role in promoting investment, encouraging innovation and mobilising resources, at the same time that is socially active in actions to eradicate poverty and reduce inequality gaps (Trubek et al. 2011). This is requiring new functionalities for law to "safeguarding flexibility" (using "new governance" tools to secure a space for experimenting and promoting innovation); "stimulating orchestration" (encouraging horizontal and vertical coordination between state agencies, and with the private sector, as well as supporting policy networks to implement policies in a complementary manner); "framing synergy" (for developing collaborative governance regimes and public-private partnerships), and "ensuring legitimacy" (securing accountability, transparency and participation to ensure results and share new ideas) (Trubek et al. 2011; on "new governance" see Lobel 2004). We note here that collaborative structures and broad public participation have been key tenets of governance in the Nordic countries, to which experience we refer extensively in this article.

[2] Paul Jourdan speaks of *spatial* linkages as infrastructure, and *knowledge* linkages as human resources development, research and development, stressing that knowledge linkages are prerequisites of production linkages (Jourdan 2014).

[3] On perspectives on the legal framework for mining from a law and development perspective, see Bastida 2008.

Contextualising the debate: some emerging trends and practice in building linkages and promoting diversification

Without intending to be exhaustive, this section takes a look into a few trends towards building linkages and promoting diversification emerging from international initiatives, law and public policy developments at national level, as well as from some examples of corporate strategies.[4]

Linkages and diversification: envisioning the sector in the context of broader development strategies

At domestic and regional levels, a great deal of effort emerges to anchor mining in development plans and in developing visions and strategies for the mining and mineral sector.

The *Africa Mining Vision* (AMV) is perhaps the first regional policy document that *looks beyond the mining sector* and places mining in the context of broader development plans at local, national and regional levels. It calls for integrating mineral policy into development policy in a more consistent manner (UNECA 2011, p. 113). The AMV will be mainstreamed at domestic levels through Country Mining Visions (CMVs), an effort to ensure that the key tenets of the AMV find expression in national mineral policy, legal and regulatory frameworks as well as to align mining with other national policies through multi-stakeholder participation processes.[5] The recently established African Minerals Development Centre (AMDC) is leading the initiative, which is at the stage of building partnerships and testing methodologies for implementation. The CMV Guidebook has just been produced through the Book Sprint process as a tool to help countries formulate their CMVs (AMDC 2014). The articulation of sectoral policies within development strategies is also becoming recognised under international initiatives (see indicative actions under the UNDP's *Strategy for Sustainable and Equitable Management of the Extractive Sector for Human Development*, 2012).

In Botswana (in a process previous and independent from the AMV), the greatest strategic challenge has been identified as diversifying its economy away from a dwindling diamond reserve, as highlighted by the *Vision 2016*, the *National Development Plan* (the Vision's blueprint) and the budget (National Development Plan). The *National Development Strategy* states that diamond production has been the backbone of the economy, and this has basically consisted of low-cost surface mining. Drawing from the observation that the economics of the sector will change due to increased costs of production and downturn in revenue, the Strategy stresses the need to encourage linkages through local beneficiation and value addition, investment promotion and diversification and citizen participation (National Development Plan, pp. 164–182). South Africa has launched its *New Growth Path Framework* with a focus on employment generation along the value chain of mining.

The experience of Norway, Sweden and Finland in the Nordic countries in harnessing resources for development is well-known (see Borssen and Ericsson 2013; Ejdemo and Söderholm 2011). It has certainly inspired policy developments in other regions, notably informing the AMV. Norway famously assigns a portion of the vast rent derived from its hydrocarbons wealth to sovereign funds for future generations. Finland, that has unique experience in the development of clusters around mines and the promotion of lateral linkages (Noras 2013; Ejdemo and Söderholm 2011) approved the *Finland's Mineral Strategy* in 2010, containing a vision for 2050: to become a global pioneer in the sustainable utilisation of minerals. The strategy aims at promoting a role for the sector in catalysing domestic growth and prosperity, providing solutions for the challenges of global mineral chains and mitigating environmental impacts (Finland's Mineral Strategy 2010). The Geological Survey of Finland (GTK) coordinates research projects that aim at transforming Finland into the leader of "responsible mineral economies" by 2020, developing new business that offer export opportunities to Finnish companies and becoming a global leader in mineral industry research (GTK website). The Finnish strategy links up with the needs for minerals envisaged by the *European Union Raw Materials Initiative* adopted in 2008.

Likewise in Sweden, a new mineral strategy was introduced in 2013 following a similar process of wide public consultation and participation (Government Offices of Sweden, 2013). Both the Finnish and Swedish strategies emphasise regional cooperation in a move to increase influence over the European policy being formed in Brussels. The *Strategy for the Mineral Industry* developed by the Norwegian government in 2013 aims at laying the basis for a profitable mineral industry that focuses on value-creation and establishing a profile among the most environmentally friendly environments worldwide. A main focus of the strategy developed by Germany is in ensuring a sustainable supply of minerals, essential inputs for its economy (German Federal Ministry of Economics and Technology (2010)). This is also the spirit of the United States of America (USA)'s *National Strategic and Critical Minerals Policy Act* of 2011, which acknowledges the primordial role of these minerals for the economy, livelihoods and national security.

Brazil consolidated the policy framework for the mining sector in the *2030 Brazilian National Mining Plan* which aims at providing the direction for planning the development of the sector in the next 20 years in ways that integrate with

[4] On aspects of fiscal linkages see the report from the 2012 CEPMLP Mining Seminar *Minerals Taxation and Sustainable Development* by Bastida and Lipschutz (2012).

[5] It has been noted that "Poverty Reduction Strategies" are most often the most up-to-date statement on national development policy, and that the contribution of extractive industries to poverty reduction is rarely mentioned under those documents (African Mineral Skills 2013).

environmental policies, to become a catalyst to sustainable development. The plan is based on three pillars: effective public governance to promote and expand the use of minerals extracted in the country for the national interest and to create the conditions to attract productive investment; value addition and furthering knowledge of all phases of the mineral sector (from geological data to mineral transformation, to furthering mineral value chain in the country, with impact in revenue and employment), and sustainability as a principle, to encourage mining in such a manner that enables benefits for the present generation and a positive legacy for future generations, preserving the environmental quality of the land during extraction and after closure, as well as productive diversification. The plan is based, among others, in the National Development Plan (*Plano Brasil 2022*) and the Policy of Productive Development (see further Scalon 2014).

Production linkages (backward or upstream): increasing requirements on local content

Local content measures to favour *backward* linkages include generally actions to increase local employment and procurement from domestic suppliers in the value chain, as well as actions that will encourage conditions for such increase over a longer term, such as education, skills training, research and development (R&D), capacity development of local business, technology and small- and medium-enterprises development and cluster development (Tordo et al. 2013; Malhotra 2013). There are factual hurdles to establish this type of linkages, let alone the fact that some forms of equipment and services might not be available locally. As a matter of practice, the industry usually relies on long established global value chains to reduce costs, ensure quality standards and reliable access (Tordo et al. 2013). There are legal restrictions placed to members of the World Trade Organisation (WTO), who are subject to the "national treatment obligation" under the General Agreement on Tariffs and Trade (GATT) that requires that goods produced locally are treated as imported ones. Further, the Agreement on Trade-Related Investment Measures (TRIMS) establishes that "performance requirements" inconsistent with the national treatment obligation (goods produced locally as well as services, and trademarks and patents) are prohibited (see Ado 2013; Di Caprio and Gallagher 2006; UNECA 2013; UN High- Level Panel, 2013).

The first successful example of the implementation of backward linkages (in modern times) is said to be that of Norway. In her paper in this Issue "Law and policy frameworks for local content in the development of petroleum resources: Norwegian and Australian perspectives on cross-sectoral linkages and economic diversification", Tina Hunter recalls the local content and diversification policies implemented in Norway—expressed in the so-called "Ten Oil Commandments" laid out in 1971. The strategy was initially aimed at building the capacity of Norwegian companies to develop the country petroleum resources and encouraged technology transfer and skills and information exchange. Licences awarded during the rounds conducted over the period 1974–1994 contained local content provisions and secured Norwegian companies an active role in the competition for supplying the oil industry. The initial period of reliance on protectionist policies was reduced as knowledge and technology strengthened during the late 1980s and the early 1990s. The experience of Norway contrasts with the one in Australia, characterised by a "soft" market approach (we note here that most recently, for example, the government of Queensland in association with the industry body, Queensland Resources Council, has launched a code of practice for local content to guide engagement with local suppliers (2013)). The author deals with some of the key themes in local content: the success of local content policies vis-à-vis existent technical and commercial skills and position, their function in the context of clear industrial strategies, the role of regulatory tools and the role of policy space in the design of local content policies (see more generally Tordo et al. 2013; Ado 2013; Ovadia 2014; Warner 2011 on basis for resource-based development in Australia and Norway, see further Ville and Wicken).

Today, it has been observed that different forms of local content regulations are in place in more than 90 % of resource-driven economies (comprising oil and gas and minerals) (McKinsey 2013). Bidding documents, mining codes and contracts as well as complementary policy statements and regulations show an emphasis on commitments on local content, local employment and local procurement. For example, the feasibility study required for applications for exploitation permits and mining concessions under the 2011 *Guinean Mining Code* must include a plan of support for building or strengthening the capacity of local small and medium enterprises, or enterprises belonging to, or controlled by Guineans for supplying goods and services for their activities and a plan of promotion of employment of Guineans according to the quotas established by the code. Title holders of mining and quarries rights as well as companies working on their behalf must grant preference to Guinean enterprises for all contracts, as long as they offer similar price, quantity, quality and terms of delivery. The obligation for local content is gradual.

Tordo et al. differentiate between *mandated* approaches to local content through targets and preference of nationals and domestic suppliers, and *encouraging* approaches, which provide incentives to investors and aspirational targets. A study of local content regulations across jurisdictions conducted by Esteves et al. observed that these requirements are generally drawn taking into consideration the broader legal web of international commitments entered into by each individual country, and that countries bound by WTO requirements might include preferential treatment to local suppliers and workers as a general recommendation rather than as a binding obligation.

A specific type of local content requirement is that favouring specific segments of the population. In South Africa, the emphasis on Broad-Based Black Economic Empowerment to redress the inequalities of the past crystallises in requirements to source goods, services and capital equipment from local companies owned or managed by disadvantaged groups (Mining Charter and Social and Labour Plans under the *Minerals and Petroleum Resources Development Act*). At a community level, agreements entered with communities and indigenous peoples often include requirements for local content, as mandated by legislation or arising from the outcomes of social impact assessments, or as a matter of negotiation or practice. To illustrate this point, the 2012 Law No. 11 of Panama establishes a special regime for the Ngäbe-Buglé territory in that country, requiring from hydroelectric projects developers that at least 25 % of its specialised and non-specialised workforce to be Ngäbe, Buglé, inhabitants or peasants from the territory or neighbour areas.

Either by mandated requirements or commitments with host governments, investment partners as IFC or indigenous communities, or as a way to secure the "social license to operate", the industry is also embracing local content policies (Esteves et al. 2013). Anglo-American has developed the Socio-Economic Assessment Toolbox (SEAT) as the process to plan for the identification and management of socio-economic impacts providing a reference point to community professionals along the life-cycle of projects, informing decisions on local procurement and supporting the process of pursuing the social licence to operate. Recurring issues addressed in the SEAT process are related to the level and distribution of benefits from projects and include access to jobs and training, access to opportunities over the supply chain and balance and distribution of social investments (Samuel 2013; SEAT). The "enterprise development programmes" are a core element of that strategy and aim at supporting small and medium enterprises with financial, technical and implementation means (Spano 2013). The focus of this type of corporate social responsibility programmes is on the transfer of business skills (a core business competence).

There is increasing aligning of local content policies and measures to promote skills development. Tanja Rasmussen and Ed O'Keefe comment in their note "The extractive industry as a development industry? Only through mineral skills development" in this Issue on the Minerals Skills Initiative to support the Africa Mining Vision. "Skills" encompass not only the traditional technical skills required for the extraction process (as mining engineering and geology) but professionals to promote core support services (as human resources, finance, legal, IT), supply chain (goods and services), governance skills (policy and legal framework, development planning, regulation) and new skills sets in planning, contracting, community development, reporting and transparency, human rights, fiscal accounting, across a range of actors, from companies and host governments to civil society. The new skills sets encompass the ability for teamwork, engaging and partnering with other stakeholders, information and new technologies management, cost management and productivity, data analysis and appreciating complexity, and approaching the way we see things from different perspectives (O'Keefe 2013).

Göran Hultin and Eva Åkerman Börje in their commentary on "Unlocking the potential of migration for inclusive development: a focus on mining and labour migration" in this Issue alert on the impact of local employment requirements (and consequently, restrictions on foreign workers) on distortions in labour markets and resulting wage inflation and labour shortages. They measure the employment impact of the extractive industries in Alberta (Canada) and Mongolia to make their point. They argue for linking educational programmes and vocational training to meet current and future workforce needs in the longer term, and for fostering greater collaboration between governments and the private sector. They make a case for furthering understanding of how to manage skilled labour migration for positive social and economic outcomes (even temporarily) and how it can be used for knowledge transfer and efficiency (within a broader development strategy). This should all come up from a focused analysis of skills needs in the short, mid and long term that allow designing a roadmap for a "skills development strategy" in partnership between governments and the industry and that aim at supporting small and medium enterprises that use mining as a platform for other services (see also Sander-Lindstrom 2013).

Production linkages (forward or downstream): adding value

The ISG Report recommends mineral countries taking a prudent approach to promote beneficiation, upon an independent study that assesses its feasibility (UNECA 2011, pp. 110–114). The *Natural Resource Charter* in its second version also advises to weigh up costs and benefits in promoting domestic participation in downstream industries (p. 35). The ISG Report averts that experience is mixed on the use of export taxes to incentivise further processing. It has been observed that the potential for forward linkages from mining can be misinterpreted and has to be driven from genuine comparative advantage or can otherwise become an activity that subtracts value in the form of low productivity and high subsidies. Comparative advantage for mineral extraction does not equal to comparative advantage for smelting and refining of minerals (Di Boscio and Humphreys 2005; see contrasting views on current debates on beneficiation in South Africa in Turok 2014).

Certain factors set restrictions on forward linkages in developing countries, including relatively small economies of scale, strategies of multinational beneficiation companies and

the dynamics of the established global value chain (UNECA 2011), apart from lack of capital and other inputs such as energy to supply the plants necessary to take on the next step in the value chain, and often, a dearth of experienced staff. WTO members have further restrictions to add value through beneficiation as they would be reached by the prohibition on quantitative quotas on the physical amount of processed minerals under the GATT.

Beyond these considerations, a few examples illustrate greater emphasis towards adding value through further processing and beneficiation in countries with extraordinary mineral endowment. In Botswana, strategies to promote the contribution of mining to sustainable economic growth include local beneficiation and value addition, investment promotion and diversification and citizen participation. The Botswana Diamond Hub aims at establishing Botswana as a diamond trade centre for rough and polished diamonds, as well as linking up with sustainable downstream industries (cutting and polishing, and jewellery manufacturing) (National Development Plan; Mbayi 2011). De Beers signed a sales agreement with the government of Botswana in September 2011 to move its rough diamond sales to Gaborone by the end of 2013. De Beers corporate responsibility strategies have shaped accordingly towards setting beneficiation as a core element of the company's business model (De Beers website) along a "shared value" model. In *De Beers Diamond Dialogues*, it is stated that "Never has it been more clearly in the interest of the private sector to find ways of harmonising their activities with the economic development agendas of host governments. This is not only important from a licence to operate perspective but also in terms of reducing the risk profile associated with operating in the developing world." (De Beers Diamond Dialogues 2012). While Botswana has been successful in its efforts, it is also important to realise that the diamond industry is special; and it is not possible to directly transfer experiences to other minerals and metals.

The "Salar de Uyuni" deposit in Bolivia is said to hold one third of the world's lithium resources—a mineral that is essential for the fabrication of lithium-ion batteries, required for electrical cars. The Bolivian government has drawn up a three-phased plan based on domestic investment and technology development. Production of lithium carbonate and potassium chloride would take place over the first phase (2012–2015). The second phase (2016–2017) envisages their industrial production while the elaboration of lithium-ion batteries in Bolivia is planned for the third phase (2016–2020). There are some reservations on the approach and the implementation of this plan, with delays on the starting up of the initial phase and limited public information, apart from limited involvement of domestic stakeholders including the private sector, civil society organisations, the academic community, regional authorities and local communities (Carbonnier and Jimenez Zamora 2013).

In Indonesia, a major goal of its *Master Plan* is increasing value addition and expanding the industrial base, moving up in the value chain in promoting production efficiency and marketing efforts to integrate domestic markets. It foresees boosting regional economies and strengthening innovation. With reference to its natural resources, the *Master Plan* states that "[Indonesia] must be able to optimise the handling of its natural resources by increasing a processing industry that will provide high added value, while at the same time reducing exports of raw materials" (p.18). The 2009 *Mining Law* requires Mining Business and Special Mining Business Licence holders to increase the added value of mineral and/or coal resources in conducting mining, processing and beneficiation as well as in making use of minerals and coal. Holders of Production/Operational Licences must conduct mineral processing and beneficiation of domestic mining (they can also process and refine mining outputs from other licence holders). These provisions have been implemented by a *Ministerial Regulation* that imposes obligations on mining companies to carry out onshore processing (either by themselves or through cooperation with appropriately licenced third parties). Furthermore, it sets a ban on the export of ore/raw materials. The lower chamber of Congress in Philippines has approved a bill banning exports of raw minerals and requiring domestic processing. In South Africa, the "New Growth Path Framework" and subsequent documents provide for a strategy for mineral beneficiation in the country (Republic of South Africa, 2011; see comments and a critique in Leon 2013).

Consumption linkages: estimating workers' spending

Olle Östensson's paper in this Issue, "The employment effect of mine employees' local expenditure", discusses the effect of the expenditure of employees from large mining projects at sub-national level and argues that its impact can be assimilated to production linkages. As it reviews a few cases, it notes the problems for the identification and quantification of induced employment. It suggests that further practice on baseline studies on local economic conditions as part of social impact assessments prior to starting development, as well as greater delegation of power to make decisions about regional development planning to lower level authorities could encourage estimating the impact of workers' spending.

Horizontal (or side-stream) linkages: "leveraging infrastructure for development"

The traditional enclave model of infrastructure development envisages holders of resource rights and project operators to negotiate exclusive access and operation of power, water and transportation infrastructure to ensure their continuing functioning. The model that is gaining currency today is linking up

minerals and hydrocarbon extraction with the building up of long-term assets as infrastructure for local, national and regional development, acknowledging the role of the private sector in bridging the "infrastructure gap" common in developing economies (Toledano et al. 2014; World Bank 2011; UNECA 2011; African Development Bank et al. 2013). Toledano et al. (2014) note that this can occur by reinvesting tax revenues in infrastructure development or by designing and requiring shared use or open access of resource infrastructure. Within "shared use", they distinguish between "multi-use" where a group of companies operating in a region use specific types of infrastructure—or "multi-purpose" whenever non-mining users have access to that infrastructure (such as for passengers transportation, agriculture or forestry projects accessing power or transportation infrastructure). The authors point at the ensuing gains derived for governments in terms of reducing operating costs and increasing tax revenues from "multi-use" infrastructure, and efficiencies in terms of lowering costs of water, energy and transportation for other users, with impacts on regional economic development for "multi-purpose"-type of arrangements. Perhaps the "Resources for Infrastructure" agreements used by Chinese companies have challenged the established model and pushed companies to come up with innovative approaches (Di Boscio et al. this Issue).

Multi-purpose arrangements that lead to "development corridors" are central to the *Africa Mining Vision*. Development corridors are transportation and/or commercial corridors with economic potential identified through *Spatial Development Initiatives* (SDIs). SDIs prioritise and promote the use of infrastructure and large-scale investment in specific geographic areas, thereby encouraging strengthened linkages with local economies and overall competitiveness of the continent. SDIs are based on principles of real economic potential, private capital participation, strategic investment of public resources and inclusion of a range of stakeholders to achieve a common objective of economic growth and development (Thomas 2009). The most well-known example in Africa is the Maputo Development Corridor, implemented at a regional level through a partnership between the governments of Mozambique and South Africa. It connects the Northern and Eastern regions in South Africa with the Mozambican Maputo port through a road and rail network. Along the 590-km road between Johannesburg and Maputo, a range of industries have localised including ironworks sites, petrochemical plants, quarries, mines, smelters, sugar cane plantations and forests, as well as the manufacture industry (UNECA 2004). Earlier examples in the Nordic countries include the Narvik-Kiruna-Luleå railway in Northern Norway/Sweden, which was opened in the late 19th century (Viklund 2012).

The World Bank has defined "resource corridors" as "a sequence of investments and actions to leverage a large extractive industry investment in infrastructure, goods and services, into viable economic development and diversification along a specific geographic area". It notes that the concept has existed implicitly for some time, if experiences as the coal belt in North England or the Ruhr Valley in Germany are considered. The World Bank is supporting projects such as the National and Regional Resource Corridor Program recognised as a National Priority Program by the government of Afghanistan. It envisages linkages with a supply chain and downstream investment (a steel mill) that could generate 100,000 jobs indirectly. Induced activities fostered by expanded power and transportation capacities and strategic communal investment would have a larger effect in terms of jobs (Jaffrin 2013). More broadly, the World Bank is doing significant work in "growth poles". They look specifically at how infrastructure developed for a project (mining, agriculture) could generate spillovers into other sectors. The "growth pole" can manifest through development corridors or special economic zones, or agglomeration economies and is a broader concept as it builds on the assumption of the need of simultaneous and coordinated investments in many sectors "to support self-sustaining industrialization in a country". It entails the participation of public and private investment usually combined around an existing resource in a specific location in an economy. The "growth pole" is conceptually based on the work of Perroux and his assumption that an economy should develop regional centres of economic strength to achieve higher income levels (Speakman and Koivisto 2013).

The paper by Nicolas Di Boscio, Mark Slade and Jordan Ward "Digging deeper for development: the case of Simandou and the Southern Guinea Growth Corridor" in this Issue, provides a perspective of innovative corporate responses and a specific case on planning for economic growth along mining infrastructure. The Simandou project in Guinea belongs to a new generation of projects that assimilates to some oil projects if considering their relative contribution to GDP. At full production, the Simandou annual revenue is calculated to double the size of the Guinean economy. Yet, development opportunities in terms of linkages with agriculture and aquaculture, services, trade and export industries are considered to be larger than direct benefits manifested by tax revenue. The Simandou project has generated the "Southern Guinea Growth Corridor" initiative that supports a comprehensive planning process that entails an extensive baseline, the identification of broader economic potential and the assessment of commercial opportunities and investment in infrastructure and social programmes (the railway linking up a high fertile but not exploited agricultural region, the port adding shipping capacity, new roads connecting villages). A crucial point that the paper shows is the extent to which companies are facing up to the current challenges and embracing "participatory economic planning beyond mining". The authors argue that this could be considered as a source of competitive advantage in getting access to mineral deposits in the decades to come. There is certainly great scope for

synergies between public and private efforts in initiating this type of undertakings.

Robin Bloch presented at the seminar developments of a project to design a Structure Plan for Freetown in Sierra Leone in collaboration with the Freetown City Council and the Ministry of Lands, Country Planning and the Environment, funded by the European Union. The project is set to define the main goals and content for a National Spatial/Territorial Development Plan, due to express the national development policy embodied by the "Agenda for Prosperity" (2013). The iron ore complex that comprises two projects is the "key propulsive sector". The project relates to a World Bank's project engaged in the diagnostic of growth poles for Sierra Leone. It is noted that resource corridors are emerging and leveraging into growth poles, with spillover effects, and linkages are identified. The preliminary findings show that the development of the regionally scaled iron ore complex provides real opportunities for the towns in the country's Northern Province and for the capital city, Freetown (Bloch 2013).

Experimenting with collaborative approaches to law, governance and policy

The path of policy-making in the mineral sector emerging from a few countries and initiatives is towards integrating mining within broader development strategies and linking up with other sectors. This requires coordinated, joined-up approaches in designing policy, drafting laws and agreements and, generally, taking decisions in the sector. There are certainly a range of practices on platform dialogues and multi-stakeholder forums, and the cases shared in this review provide a sense of direction towards collaborative approaches, as part and parcel of a more general trend towards collaborative governance (for collaborative decision-making practices in Western United States, see Richardson 2003; for the role of cooperation in longer-term development and innovation in Australia and Norway, see Ville and Wicken 2012; see the OECD's *Policy Dialogue on Natural Resource-Based Development* 2013). In this exploratory review, we point at a few developments in this direction.

We mentioned that plans are for the Africa Mining Vision (AMV) to be mainstreamed and "domesticated" at country levels through a process that starts with defining "Country Mining Visions" (CMVs). In the processes brought about by CMVs, it is envisaged options would be identified to align mining within domestic development policy through transparent, multi-stakeholder and cross-sectoral processes. The rationale for CMVs is that they would cut across and coordinate various government agencies to ensure policy coherence when taking decisions for extractive industries. CMVs would connect with regional plans (like those for Resource Corridors and Spatial Development Initiatives) and at a local level (as sustainability strategies and community development projects at a project level) (AMDC 2014).

To foster the dialogue process, the preparatory works for CMVs are using collaborative tools to launch platforms for dialogue, as the Mineral Value Management (MVM) tool developed by the Responsible Mineral Development Initiative by the World Economic Forum. This tool has identified seven value dimensions (fiscal, employment and skills, environment and biodiversity, social cohesion, cultural and socio-economic implications, procurement and local supply chain, beneficiation and downstream and infrastructure) that can assist governments to come up with a more rounded understanding of the needs and expectations from different stakeholders to inform strategies for the sector (WEF 2013a; b; Petersen 2013). Reliance on collaborative processes and tools such as the MVM—core to the concept of "new governance"—has also been suggested by the report of the thematic group on Extractive Industries prepared by the Sustainable Development Solutions Network as a contribution to the Post-2015 Development Agenda (SDSN 2013; see also an emphasis on ministerial coordination for the development of comprehensive strategies in the extractive industries in the second version of the *Natural Resource Charter*, p. 7; and on participatory approaches to legislation, policy and planning as well as operational practices in the Framework for Extractive Industries and Human Development elaborated under the UNDP's *Strategy for Supporting Sustainable and Equitable Management of the Extractive Sector for Human Development*, 2012, and *Swedish Minerals Strategy*, 2013).

On the scope of cooperative practices, it is interesting to note that in Sweden, regional mineral strategies have been developed by mineral-rich regions; this initiative has not only became an important input to the national strategy but also a basis for cross-border cooperation with the mineral-rich regions in both Norway and Finland. As an example of the joint initiatives between the county administrative board of Norrbotten in Sweden and the regional council of Lapland in Finland is their membership of the *Covenant Circular Economy 2022*—which aims at coordinating efforts to facilitate and contribute to the Strategic Implementation Plan of the *European Innovation Partnership on Raw Materials*. Each of these regions have more in common in an East/West cooperation than to seek cooperation with the national capital, a thousand kilometres southwards in each country.

An interesting point is the conceptualisation of traditional mining agreements in the context of collaboration as now interpreted. Frilet and Haddow observe that ever since the start of industrial mining, laws and contracts in the mining sector in the developing world have typically been designed to meet the needs of investors and mineral consuming markets, with a focus on security and stability for the miner. The authors argue that traditional agreements are designed to "cast in stone terms relating to future decades of operation", while

most often they will not provide the stability and resilience required to pass the test of time. For durable mining agreements to function in the current context and taking into consideration the developmental aspirations of host countries, the authors suggest agreements should be grounded on mutually agreed objectives brought about by each party; on a definition of economic balance for the company to operate, and drawing on forms akin to the schemes of public-private partnership agreements (such as those granting long concessions for public infrastructure). Agreements should hence be conceived as "goals-based", with terms that support those goals—and engage the various layers of the state—, rather than "terms-based". Likewise, agreements used in the sector could be reconceptualised from *mining agreements* granting rights to a miner to *collaboration agreements*, similar to joint ventures, that set a framework of understanding and process that can accommodate significant changes in circumstances (Frilet and Haddow 2013).

Stanley and Mikhaylova observe that the trend in contractual practice in the sector is towards negotiating a package of contributions to ensure the economic impact of a mine from a comprehensive and sustainable perspective. Planning and use of infrastructure is becoming one of the key aspects of such a package, as well as the use of public-private partnerships (Stanley and Mikhaylova 2011; see also World Economic Forum, World Bank, African Development Bank 2013). In the seminar we are drawing materials from, a special session discussed the structuring of tenders and mining agreements around infrastructure and resource for development corridors and focused on the infrastructure challenges in Africa. Stéphane Brabant and Christophe Lefort reviewed existing tools for integrated mining and infrastructure projects and suggested none of them are designed to facilitate a non-mining-related infrastructure project. They explored alternative mechanisms: the "integrated method" that assumes a single integrated mining/infrastructure project, a team of mine operator and infrastructure contractor, and a Special Purpose Vehicle (SPV), a single tender for the award, and a commitment by the mine operator on minimum revenue streams for infrastructure funding; and an "agency method" that comprises two projects (a mining and an infrastructure project) and three agreements (a mining, an agency and an infrastructure agreement), where the mining operator is designated according to a mining tender and the operator, in turn, manages the infrastructure tender and the infrastructure agreement on behalf of the government (Brabant and Lefort 2013). Glen Ireland, in turn, reviewed the key questions to be defined in a mining infrastructure regime: the questions regarding the design, funding, building, ownership, access and use of infrastructure, as well as the manner decisions on access and tariffs are made. Ireland suggests the use of an infrastructure SPV (Ireland 2013). In a recent comment written upon the signing of an investment framework for the huge Simandou iron ore in Guinea, Aplin and Ireland highlight the innovative nature of the proposal for infrastructure development that would link the mine through a 650-km railway with the seaport (see Di Boscio, Slade and Ward, referred earlier). Such infrastructure would be owned and financed by an independent infrastructure company and made available to third parties on an "open access" basis. The authors note that such approach marks indeed a departure from the traditional mine and associated infrastructure model where they are both owned and controlled by a mining company (Aplin and Ireland 2014 and Aplin 2014).

Discussing findings: *disconnected* and *reconnecting* strands of the debate

We have come a long way from the focus of the role of the mining sector in generating tax revenue and foreign currency and the implicit assumption that benefits would automatically trickle down for the gains of society, more broadly. Such a limited role elaborated through legal and fiscal frameworks in the context of developments in the 1990s was reinforced by a global architecture for trade and investment that facilitated free flow of investment and resources and discouraged linkages with local economies. The one-dimensional view of the sector was materialised through sectoral reforms and programmes. The focus of mineral resources was placed on their nature as commodities in free-market economies, which must not be treated differently to other economic activities.

The view of the extractive resource sector as a "curse" that has dominated the mining and development debate mostly over 2000s–2010s as pointed out by Dietsche, prompted a myriad of international initiatives—and fragmented developments in national and local spheres as well as on laws of extra-territorial application from home states of investors particularly on anti-corruption to curb rent-seeking and enhance good governance and institutional quality (Collier 2008; Firger 2010; Norman 2012). Resource governance has become a well-established focus of work of international institutions. The negative vision of resources as "curse" is paving the way to a more positive approach, stressing the potential transformational role that resources can play in the process of development. In linking up resources with industrialisation processes, analysis expands from the typical sectoral, "silo" thinking towards multi-disciplinary, multi-level and cross-sectoral approaches for building linkages with national and local economies. This expansive approach is being captured by emerging "visions" of the sector in the context of broader development strategies. So far, the resource governance agenda seems to be capturing fragmented aspects of this debate (as local content initiatives, as pointed by Dietsche, or resource corridors planning).

There seems to be much scope for further connecting the extremely valuable work being advanced on resource

governance with the strands of knowledge on the extent to which cross-sectoral linkages promote diversification and broader-based development from initial resource assets. On this point, we note that the *Extractive Industries Review* commissioned by the World Bank back in 2001—which among other studies of the time triggered impetus for impressive action on enhancing resource governance—had raised the question of maximising added value and integrating mineral sectors into national development plans, and had pointed at the desire of governments to "retain as much wealth as possible" by fostering industrial development that balances space between transnational and smaller domestic companies (EIRE 2003, pp. 6 and 16).

In enquiring about the *processes* that provide the fertile grounds for linkages to occur, great emphasis is being placed on collaborative, coordinated and joined-up approaches—the "enablers" of developmental States. Developments are pointing at a greater role for mining agencies to orchestrate their work in coordination with other state agencies; for innovative structures to frame mining and infrastructure agreements in such a manner that they foster collaboration and synergy between the parties. If this is the way forward, there is room to connect and reconnect streams of work and the job of different departments within institutions that have traditionally been kept separated. This also applies to approaches of international organisations and advisory teams to reform in the sector. Mining codes reform particularly in countries with weak institutional structures are often carried out as technocratic exercises to be delivered by consultants under strict deadlines. Joined-up approaches would require instead supporting the governance of reform processes (including the strengthening of the capacity of public officials to make informed decisions) to enable collaborative engagement and constructive discussions among stakeholders to agree on the contents of legislative and governance documents, following good governance principles. This would require linking up with streams of work on growth poles and resource corridors, which are most often not integrated within the processes of legal and institutional reform for the sector. The question to be asked is whether existing institutions and processes in the sector at all levels and in all relevant institutions promote or hinder collaboration and coordination, to promote linkages and diversification.

The processes for development to occur are context-specific. The paper by N. Håkan Tarras-Wahlberg "Social license to mine in Sweden: do companies go the extra mile to gain community acceptance?" in this Issue, on the mixed experiences of foreign companies in obtaining the "social license to operate" through the use of best practice Corporate Social Responsibility (CSR) tools in Sweden, sets challenges to all-encompassing strategies and points to differentiated, tailor-made approaches in dealing with local communities, local culture and local contexts.

In this changing environment for doing business, Ken Haddow in this Issue suggests that mining companies should strategically align their projects with the developmental goals of host communities and countries by recognising projects as being part of those larger plans. This view entails a shift from CSR towards "shared value" by which business creates economic value at the same time than creating value for society in ways that meet society needs, thereby boosting innovation and productivity (Porter and Kramer 2011). A few developments show steps towards this direction by the most enlightened companies.

Regarding *tools* to promote linkages and diversification, there is room to integrate these aspects further from the time of law, policy and institutional design, both generally and to attract investment in a particular region; in licensing and tendering, and in the legal, contractual and fiscal structures more generally; in the setting up of governance networks; there is also room to think about these aspects from the inception of projects through to their construction, operation and closure (see the Intergovernmental Forum (IGF)'s *Mining Policy Framework*, revised 2013).

The full integration of economic aspects through planning tools such as spacial planning converge with the increased complexity of tools for managing and planning environmental and social impacts. Consistently with the call of the Rio +20 Outcome Document, efforts should be addressed to further consistency, coherence and mainstreaming of all aspects of sustainable development through integrated management tools (as Territorial Ordering, Strategic Integrated Assessments). Likewise, increased complexity of projects and the sector is defying the institutional dynamics, staffing levels and capacity and budgets of traditional sectoral ministries; strategic decisions are needed to meet new challenges. Dietsche suggests a good starting point for a way forward would be integrating assessments about the impacts of individual projects with cumulative sector impacts and forward-looking macro-economic management to inform public policy and processes of decision-making at all levels, in coordination with the private sector.

Conclusions: way forward?

We started off this Editorial Note by pointing at the process that is being led by the United Nations, to define a set of "Sustainable Development Goals". Time is ripe to bring more cohesion to the various dimensions of sustainable development as apply to mining, and to expand and substantiate on the economic dimension and the transformational role of resources for linkages and diversification to mobilise resources to eradicate poverty through inclusive and collaborative processes. Time is ripe too for genuinely opening up and conducting a candid debate on

the extent to which the global architecture for investment, trade and intellectual property rights (as well as national, regional and local frameworks and institutions) are conducive to linkages and diversification, thus supporting productive capacities and fully capturing the value of resources for resource-driven economies and their peoples.

Truly valuing resources entails full endorsement and implementation of transparency, capacity and accountability principles; adherence to the mitigation hierarchy; the use of the most advanced technology to manage impacts, as well as estimating the value of resources and ecosystem services affected by their extraction through natural accounting techniques, to get a true picture of costs and benefits (UN System of Environmental-Economic Accounting; World Bank's Wealth Accounting and Valuation of Ecosystem Services (WAVES); see also UN High Level Panel, 2013; Milligan et al. 2014). There are a few aspects related to the valuing of resources for their transformation, which have not been given sufficient weight in the discussion and should be more carefully taken into consideration: firstly, the long-term nature of the mining industry, both in terms of the time required to open a mine and to put it into production, and of the fact that mining regions are often active for hundreds of years; secondly, the need to differentiate between types of mining and minerals as determinants of their potential and ensuing strategies to establish linkages (mining certain types of minerals and deposits, including some quarries, can last for centuries, providing plenty of time to build linkages, while others as small gold deposits can take less than 10 years; regional strategies for prospective mining districts and making the most of economies of scale would be required); thirdly, the specific nature of a mine which, unlike other industries, cannot be moved but it is tied to the resource in the ground; fourthly, the fact that metals are elements and hence indestructible, they become depleted at the site of extraction but available at the point of consumption for human use and recycling (all copper which has been mined is still around); fifthly, the non-renewable nature of metals at the point of extraction (and the blurring lines with conventional categorisations of renewable resources, many of which are today at critically low levels such as cod and tropical forests).

In the seminar that brought this Special Issue together, we got the collective sense of starting to scratch the surface of an extraordinarily complex and multi-layered dimension of mineral development. The sense is that we need more case studies, further inter-disciplinary research and debate, further bridges between academic conceptualisation and practice to further advance the understanding of what entails a shift from *extractive* towards *transformative* industries. We very much appreciate the contributions of the authors of papers and comments to this Special Issue and hope this publication is a step in that direction.

References

Books and articles

Ado R (2013) Local content policy and the WTO rules of trade-related investment measures (TRIMS): the pros and cons. Int J Bus Manag Stud 2(1):137–146

Aplin M, Ireland G (2014) Will Simandou deliver on the promise of shared-use mining infrastructure in Sub-Saharan Africa. Comment available at http://www.infra-share.org/wp-content/uploads/2014/06/Simandou_article.pdf

Aplin M (2014) Can Simandou infrastructure deal deliver? Min J 38–39

Arias M, Atienza M, Cademartori J (2013) Large mining enterprises and regional development in Chile: between the enclave and cluster. J Econ Geogr 1–23

Auty R (2006) Mining enclave to economic catalyst: large mineral projects in developing countries. Brown J World Aff XIII(1):135–145

Bastida AE (2008) Mining law in the context of development. An overview. In: Andrews-Speed P (ed) International competition for resources: the role of law, the state and of markets. Dundee University Press, Dundee, p 101–136, also available at http://www.dundee.ac.uk/cepmlp/staff/eabastida_mininglawcontextdevelopmentmodels.pdf

Bastida, AE, Lipschutz K Report of the 2012 CEPMLP Mining Seminar *Minerals Taxation and Sustainable Development* available at http://www.dundee.ac.uk/cepmlp/gateway/index.php?news=31841

Carbonnier G, Jimenez Zamora E (2013) Can lithium energize sustainable development in Bolivia? Institutional and policy challenges. J Environ Sci Eng 2(9)

Collier P (2008) Laws and codes for the resource curse. Yale Hum Rights Dev J 11(1): Article 2, available at http://digitalcommons.law.yale.edu/yhrdlj/vol11/iss1/2

Di Boscio N, Humphreys D (2005) Mining and regional economic development. In: Bastida AE, Wälde T, Warden-Fernandez J (eds) International and comparative mineral law & policy: trends and prospects. Kluwer Law International, The Hague, pp 589–606

Di Boscio N, Slade M,Ward J (2014) Digging deeper for development: the case of Simandou and the Southern Guinea Growth Corridor. doi:10.1007/s13563-014-0052-x. [in this Issue]

Di Caprio A, Gallagher K (2006) The WTO and the shrinking of development space: how big is the bite? J World Invest Trade 7(5):781–803

Dietsche E (2014) Diversifying mineral economies: conceptualising the debate on building linkages. doi:10.1007/s13563-014-0058-4. [in this Issue]

Ejdemo T, Söderholm P (2011) Mining investment and regional development: a scenario-based assessment for Northern Sweden. Resour Policy 36:14–21

Farooki M, Kaplinsky R (2014) Promoting diversification in resource rich economies. doi:10.1007/s13563-014-0050-z. [in this Issue]

Firger D (2010) Transparency and the natural resource curse: examining the new extraterritorial information forcing rules in the Dodd-Frank Wall Street Reform Act of 2010. Georgetown J Int Law 41: 1043–1095

Frilet M, Haddow K (2013) Guiding principles for durable mining agreements in large mining projects. J Energy Nat Res Law 31(4): 467–475

Haddow K (2014) How best can mining be a catalyst for diversifying economies? (Commentary). doi:10.1007/s13563-014-0049-5. [in this Issue]

Hultin G, Åkerman Börje E (2014) Unlocking the potential of migration for inclusive development: a focus on mining and labour migration (Commentary). doi:10.1007/s13563-014-0061-9. [in this Issue]

Hunter T (2014) Law and policy frameworks for local content in the development of petroleum resources: Norwegian and Australian perspectives on cross-sectoral linkages and economic diversification. doi:10.1007/s13563-014-0051-y. [in this Issue]

Jourdan P (2008) Plan of action for African acceleration of industrialization – promoting resource-based industrialization: a way forward, A paper prepared for the African Union Commission

Lobel O (2004) The renew deal: the fall of regulation and the rise of governance in contemporary legal thought. Minn Law Rev 89: 342–470

Mbayi L (2011) Linkages in Botswana's diamond cutting and polishing industry. *Making the Most of Commodities Programme Discussion Paper No 6*, Open University and University of Cape Town, March, available from http://commodities.open.ac.uk/8025750500453F86/(httpAssets)/1C5D9129D19324A28025787E003A693D/$file/Linkages%20in%20Botswana's%20Diamond%20Cutting%20and%20Polishing%20Industry.pdf

Milligan B, Terama E, Jimenez-Aybar R, Ekins P (2014) GLOBE natural capital accounting study, 2nd edn. GLOBE International and University College of London, London

Morris M, Kaplinsky R, Kaplan D (2012) One thing leads to another: promoting industrialisation by making the most of the commodity boom in Sub-Saharan Africa. University of Cape Town, available from http://www.prism.uct.ac.za/Downloads/MMCP%20Book.pdf

Norman M (2012) The challenges of state building in resource rich nations. Northwest J Int Human Rights 10(173), available at http://scholarlycommons.law.northwestern.edu/njihr/vol10/iss3/3

Östensson O (2014) The employment effect of mine employees' local expenditure. doi:10.1007/s13563-014-0056-6. [in this Issue]

Ovadia JS (2014) Local content and natural resource governance: the cases of Angola and Nigeria. Ext Ind Soc

Pedro A (2013a) The Africa Mining Vision (AMV) as a Model for Natural Resources Governance in Africa, a paper submitted following a presentation at the International Forum *Governing Natural Resources for Africa's Development* organised by the North–South Institute, 9 and 10 May 2013

Pedro A Book review of Morris, Mike; Kaplinsky, Raphael and Kaplan, David, One thing leads to another: promoting industrialisation by making the most of the commodity boom in Sub-Saharan Africa, The Journal of Development Studies, available online 5 Sept 2014

Porter M, Kramer M (2011) Creating shared value. Harv Bus Rev

Rasmussen T, O'Keefe E (2014) The extractive industry as a development industry? Only through mineral skills development (Commentary). doi:10.1007/s13563-014-0054-8. [in this Issue]

Richardson R (2003) Governing western mineral resources: the emergence of collaboration. Nat Resour J 43:561–583

Scalon M (2014) Designing local content policies for the mining sector in Brazil in an international context, LL.M Dissertation. University of Dundee, Dundee

Speakman J, Koivisto M (2013) Growth poles: raising competitiveness and deepening regional integration, Chapter 2.3, The World Economic Forum, available from http://www3.weforum.org/docs/ACR/2013/ACR_Chapter2.3_2013.pdf (citing Perroux, F. "A Note on the Notion of Growth Pole", *Applied Economy* 1.2 (1955), p 307–20)

Stanley M, Mikhaylova E (2011) Mineral resource tenders and mining infrastructure projects. Guiding principles, Extractive Industries for Development Series No 22, September 2011, available at http://siteresources.worldbank.org/INTOGMC/Resources/EITI22weboct17.pdf

Tarras-Wahlberg NH (2014) Social license to mine in Sweden: do companies go the extra mile to gain community acceptance?. doi:10.1007/s13563-014-0053-9. [in this Issue]

Thomas R (2009) Development corridors and spatial development initiatives in Africa, a paper written for the African Development Bank/John Hopkins University, available at http://www.fdi.net/documents/WorldBank/databases/africa_infrastructure/Thomas_SDI_paper_lowres.pdf

Toledano P, Thomashausen S, Maennling N, Shah A (2014) A framework to approach shared use of mining-related infrastructure, Columbia Center on Sustainable International Investment, Columbia University, available from http://ccsi.columbia.edu/files/2013/11/A-Framework-for-Shared-use_March-2014-1.pdf

Tordo S, Warner M, Manzano OE, Anouti Y (2013) Local content policies in the oil and gas sector. The World Bank, Washington, available at http://documents.worldbank.org/curated/en/2013/01/17997330/local-content-oil-gas-sector

Trubek D, Coutinho D, Schapiro, Mario G (2011) Towards a new law and development: new state activism in Brazil and the challenge for legal institutions. Legal Studies Research Paper Series, Paper Nbr 1207, University of Wisconsin, available at https://media.law.wisc.edu/s/c_638/zhhmj/towards_-ssrn_version_ssrn-id2144939.pdf

Trubek D (2013) Law, state and the new developmentalism. An introduction. In: Trubek D, Alviar Garcia H, Coutinho D, Santos A (eds) Law and the new developmental state—the Brazilian experience in Latin American context. Cambridge University Press, New York, pp 3–27

Turok B (2014) The scope of domestic value addition in a mining economy: the South African case, Discussion Paper

Viklund R (2012) "Riksgränsbanans elektrifiering: stat och företag i samverkan: 1910-1917", Diss. (Luleå: Luleå Tekniska Univ.) (in Swedish), available at http://pure.ltu.se/portal/sv/publications/riksgransbanans-elektrifiering(34728ac9-b4e4-47b8-9114-1a56d1e21733).html (kindly facilitated by Magnus Ericsson)

Ville S, Wicken O (2012) "The dynamics of resource-based economic development: evidence from Australia and Norway". Ind Corp Chang 22(5):1341–1371

Warner M (2011) Local content in procurement: creating local jobs and competitive domestic industries in supply chains. Greenleaf Publishing Limited, Sheffield

Documents: reports

African Development Bank, Organisation for Economic Cooperation and Development (OECD) Development Centre, United Nations Development Programme (UNDP) (2013) African economic outlook 2013—special theme: structural transformation and natural resources'

African Development Bank, Organisation for Economic Cooperation and Development (OECD) Development Centre, United Nations Development Programme (UNDP) (2014) African Economic outlook 2014—special theme: global value chains and Africa's industrialisation

African Minerals Skills (2013) African country mining vision document, available at http://www.africanmineralskills.org/wp-content/uploads/2013/06/AMSI_CMV.pdf

Buur L, Therkildsen O, Hansen MW, Kjær M Extractive natural resource development: governance, linkages and aid, Danish Institute for International Studies (DIIS) Report 2013, available from http://en.diis.dk/files/publications/Reports2013/DIIS-RP-2013-28_Extractive-dev_lbu-mfl_web.pdf

Esteves AM, Coyne B, Moreno A Local content initiatives: enhancing the subnational benefits of the oil, gas and mining sectors, Revenue Watch Institute, July 2013, available from http://www.revenuewatch.org/sites/default/files/RWI_Sub_Enhance_Benefits_EN_20131118.pdf

Extractive Industries Review, Striking a better balance, Volume I: the World Bank and extractive industries, World Bank Group (Report of December 2003)

Jaffrin GS (2013) Project information document (concept stage)—Afghanistan resource corridor project—p145443. World Bank, Washington, DC, http://documents.worldbank.org/curated/en/2013/04/17621112/project-information-document-concept-stage-afghanistan-resource-corridor-project-p145443

McKinsey Global Institute (2013) Reverse the curse: maximizing the potential of resource-driven economies (authored by Dobbs, Richard; Oppenheim, Jeremy; Kendall, Adam; Thompson, Fraser' Bratt, Martin and van der Marel, Fransje), ("McKinsey Report"), available at http://www.mckinsey.com/client_service/metals_and_mining

Organisation for Economic Cooperation and Development (OECD (2013) Policy dialogue on natural resource-based development—building collective knowledge for actionable policies, Annotated Agenda and Scoping Paper, Inaugural Meeting, OECD Conference Centre, 18–19, DEV/GB (2013) 6

Sustainable Development Solutions Network, Harnessing natural resources for sustainable development: challenges and solutions, Report of the Thematic Group 10 on the Good Governance of Extractive and Land Resources, 18 September 2013, available at http://unsdsn.org/wp-content/uploads/2014/02/TG10-Final-Report.pdf

United Nations (2013) A new global partnership: eradicate poverty and transform economies through sustainable development. The report of the high-level panel of eminent persons on the Post-2015 Development Agenda ("UN High-Level Panel"), available at http://www.post2015hlp.org/wp-content/uploads/2013/05/UN-Report.pdf

United Nations Conference on Trade and Development (UNCTAD) (2014) Trade and development report, 2014—global governance and policy space for development, available a http://unctad.org/en/PublicationsLibrary/tdr2014_en.pdf

United Nations Economic Commission for Africa (UNECA) (2011) Minerals and Africa's development—the international study group report on Africa's mineral regimes, available at http://repository.uneca.org/bitstream/handle/10855/21569/Bib-69220.pdf?sequence=1

United Nations Economic Commission for Africa (UNECA) (2013) Economic report on Africa 2013: making the most of Africa's commodities: industrializing for growth, jobs and economic transformation, available at http://www.uneca.org/sites/default/files/publications/era2013_eng_fin_low.pdf

United Nations Economic Commission for Africa (UNECA) (2014) Economic report on Africa 2014: dynamic industrial policy in Africa: innovative institutions effective processes and flexible mechanisms, available at http://repository.uneca.org/unecawebsite/?q=eroa

United Nations Economic Commission for Africa (UNECA) (2004) Minerals cluster policy study in Africa: pilot studies of South Africa and Mozambique, available from http://new.uneca.org/Portals/3/documents/Mineral_cluster_study_SA_Mozambique.pdf

United Nations Industrial Development Organisation (UNIDO) (2012) Promoting industrial diversification in resource intensive economies—the experiences of Sub-Saharan Africa and Central Asia Regions

World Bank (2011) Leveraging investments by natural resource concessionaires, Notes on Infrastructure Policy, World Bank for Republic of Liberia, World Bank, Washington D.C.

World Bank, Industry and Energy Division—Mining Unit (1992) Strategy for African mining—Africa technical department series, World Bank Technical Paper No 181. The World Bank, Washington DC

World Economic Forum (WEF) (2013a) *Mineral value management—a multidimensional view of value creation from mining*, http://www3.weforum.org/docs/WEF_MM_RMDI_Report_2013.pdf

World Economic Forum (WEF) (2013b) Responsible mineral development initiative 2013, information available at http://www.weforum.org/issues/responsible-mineral-development-initiative

World Economic Forum, World Bank, African Development Bank (2013) The Africa competitiveness report 2013, The World Bank

Law, policy, initiatives and strategy documents

International Instruments and National Legislation

United Nations General Assembly Resolution 66/288 adopted on 27 July 2012, *The Future We Want* (endorsing the Outcome Document of the United Nations Conference on Sustainable Development held in Rio de Janeiro on 20–22 June 2012 (A/RES/66/288)

Panama, Law No 11 establishing a special regime for the protection of mineral, hydric and environmental resources in the Ngable-Bugle area, Official Gazette of Panama No 27001, 26 March 2012, available from http://www.asamblea.gob.pa/apps/seg_legis/PDF_SEG/PDF_SEG_2010/PDF_SEG_2011/PROYECTO/2011_P_415.pdf

Regional and national policy instruments

African Minerals Development Centre (2014) *A country mining vision guidebook—domesticating the Africa mining vision*, United Nations Economic Commission for Africa

Botswana, *National Development Plan 10*, Volume I, available at http://www.finance.gov.bw/index.php?option=com_content1&parent_id=334&id=338

Commission of the European Communities, Communication from the Commission to the European Parliament and the Council. The Raw Materials Initiative—meeting our critical needs for growth and jobs in Europe. COM (2008) 699 final, Brussels, 4 November 2008

Germany, Federal Ministry of Economics and Technology (2010) *The German Government's raw materials strategy. Safeguarding a sustainable supply of non-energy mineral resources for Germany*, available at http://www.bmwi.de/English/Redaktion/Pdf/raw-materialsstrategy,property=pdf,bereich=bmwi2012,sprache=en,rwb=true.pdf

Government of Queensland and Queensland Resources Council, Queensland Resources and Energy Sector Code of Practice for Local Content (effective from March 2013) (related documents available from https://www.qrc.org.au/01_cms/details.asp?ID=3209)

Government Offices of Sweden (2013) *Sweden's minerals strategy*—for sustainable use of Sweden's mineral resources that creates growth throughout the country, available at http://www.government.se/content/1/c6/21/89/86/30eccfae.pdf

Norway, Ministry of Trade and Industry (2013) Strategy for the mineral industry

South Africa, *New Growth Path Framework*, available at http://www.economic.gov.za/communications/51-publications/151-the-new-growth-path-framework

Initiatives, strategies and documents developed by the International Governmental Organisations and Institutes

Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development ("IGF"), Mining Policy Framework: mining and sustainable development—managing one to advance the other, revised October 2013, available at http://www.globaldialogue.info/

Natural Resource Governance Institute, Natural Resource Charter (2nd Edition), available at http://www.resourcegovernance.org/issues/natural-resource-charter

United Nations Development Programme (UNDP) (2012) Strategy for supporting sustainable and equitable management of the extractive sector for human development, New York, available at http://www.undp.org/content/dam/undp/library/Poverty%20Reduction/Extractive%20Industries/StrategyNote_ExtractiveSector.pdf

Presentations

Bloch R Spatial planning considerations for the iron ore complex in Sierra Leone: linkages and agglomeration, presentation at CEPMLP Mining Seminar, London, 24 and 25 June 2013

Borssen A, Ericsson M (2013) Mining & cross-sectoral linkages in the Nordic countries, presentation to CEPMLP Seminar, London

Brabant S, Lefort C (2013) Alternative mechanisms to 'resources-for-infrastructure' agreements, presentation to CEPMLP Seminar, London

Ireland G (2013) Mining infrastructure: are we on the right track?, presentation to CEPMLP Seminar, London

Jourdan P (2014) Development corridors (Spatial Development Initiatives (SDIs). Using the SDIs to unlock latent economic potential, DFID, Maputo

Kaplinsky R (2013) Promoting diversification in resource-rich economies, presentation to CEPMLP Seminar, London

Leon P (2013) The South African experience, presentation to CEPMLP Seminar, London

Malhotra A (2013) Can mining promote economic diversification through linkages?, presentation to CEPMLP Seminar, London

O'Keefe E (2013) Building mineral skills for development in Africa, presentation at CEPMLP Seminar, London

Pedro A (2013b) Mining and cross-sectoral linkages under the AMV and emerging programmes, presentation to CEPMLP Seminar, London

Noras P (2013) Raw materials-based clusters in Finland, presentation to CEPMLP Seminar, London

Petersen I (2013) World economic forum's responsible mineral development initiatives (RMDI) mineral value management, CEPMLP Seminar, London

Samuel J (2013) An introduction to Anglo-American's socio-economic assessment toolbox (SEAT), presentation to CEPMLP Seminar, London

Sander-Lindstrom M (2013) Unlocking the potential of migration for inclusive development, presentation to CEPMLP Seminar, London

Spano C (2013) Enterprise development: a global strategy (Anglo-American), presentation to CEPMLP Seminar, London

Internet sites (institutional, corporate and research programmes, newspapers)

Anglo American, SEAT toolbox—socio-economic assessment toolbox, version 3, an overview, available from http://www.angloamerican.com/~/media/Files/A/Anglo-American-Plc/development/SEAT-v3-overview-21-06-12.pdf

Financial Times, "End of the Iron Age" (by Wilson, James and Hume, Neil), 29 September 2014.

De Beers Diamond Dialogues (2012) Natural resources and national development, De Beers Issue Brief No 2, May 2012, available from http://www.debeersgroup.com/ImageVaultFiles/id_1839/cf_5/Issue_Brief_2-_Natural_Resources_and_National_Deve.PDF

Open University (UK) and The University of Cape Town (South Africa), *Making the most of commodities*, Research Programme, 2009–2011, details available at http://commodities.open.ac.uk/mmcp

World Bank, Wealth Accounting and Valuation of Ecosystem Services (WAVES), site available at https://www.wavespartnership.org/en

United Nations, System of Environmental Economic Accounting (SEEA), site available at http://unstats.un.org/unsd/envaccounting/seea.asp